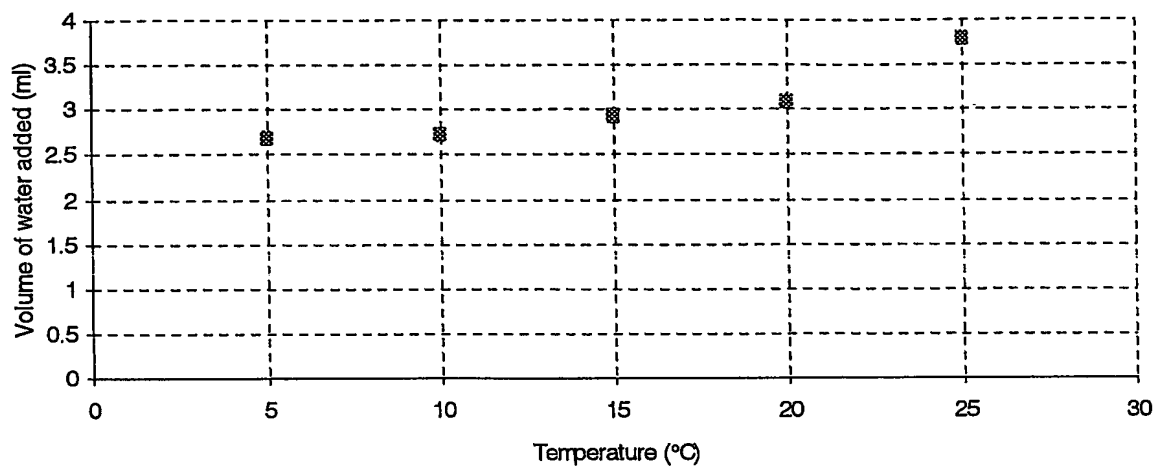


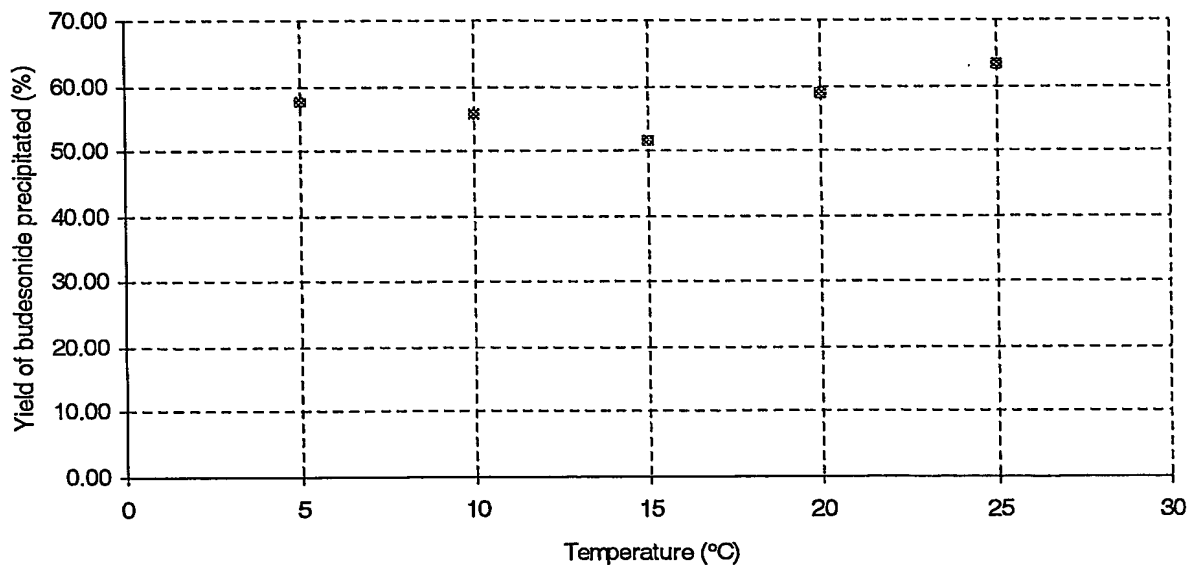
**Figure 1: average particle diameters (volume distribution) of precipitated budesonide against temperature, with no sonication.**

5

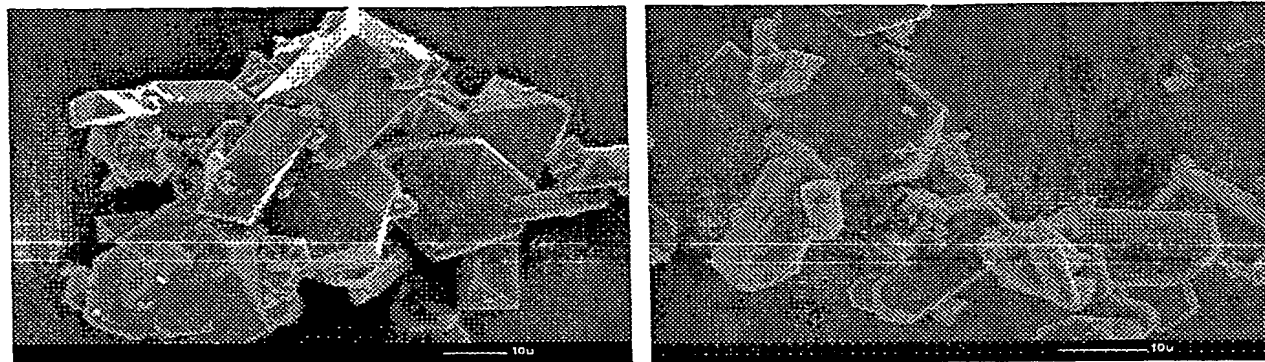
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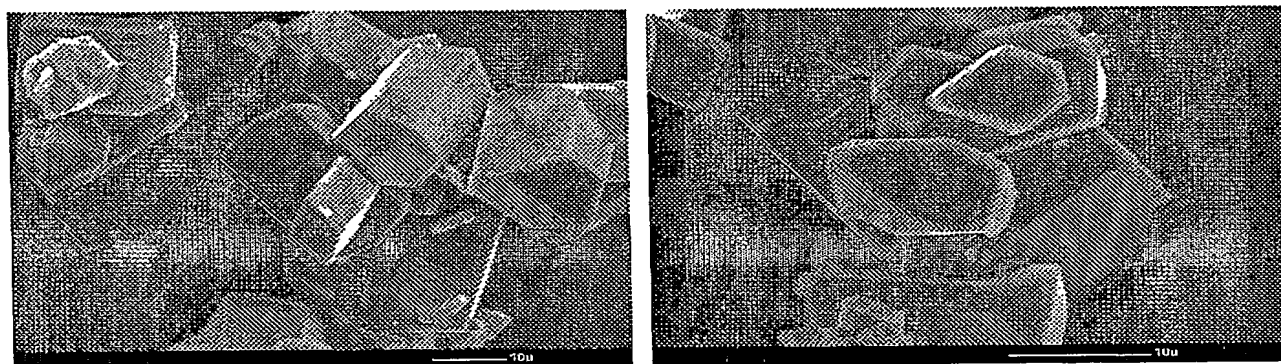
**Figure 2: minimal volume of water required to initiate precipitation of budesonide against temperature, with no sonication.**



**Figure 3: yield of budesonide precipitated against temperature, with no sonication.**

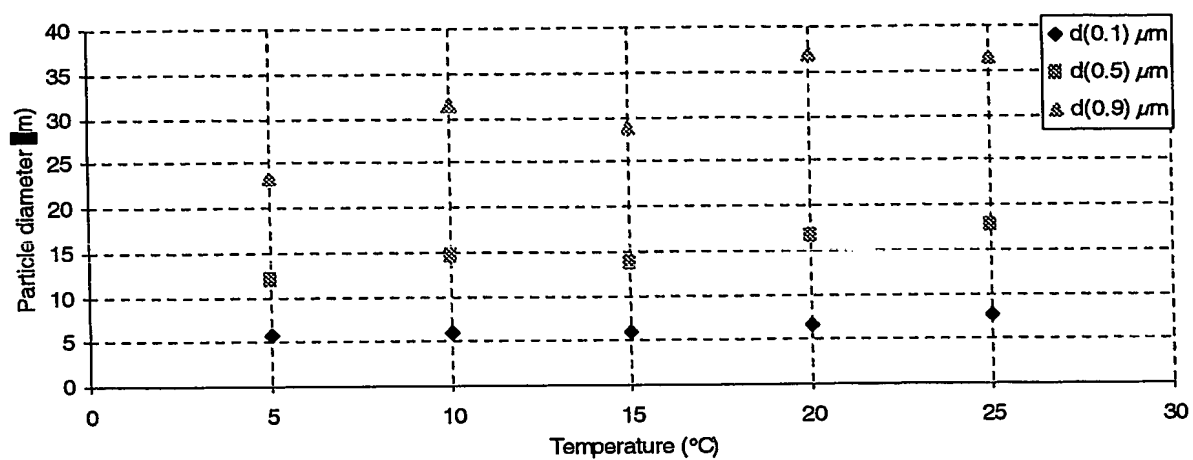


4 (a) 4 (b)

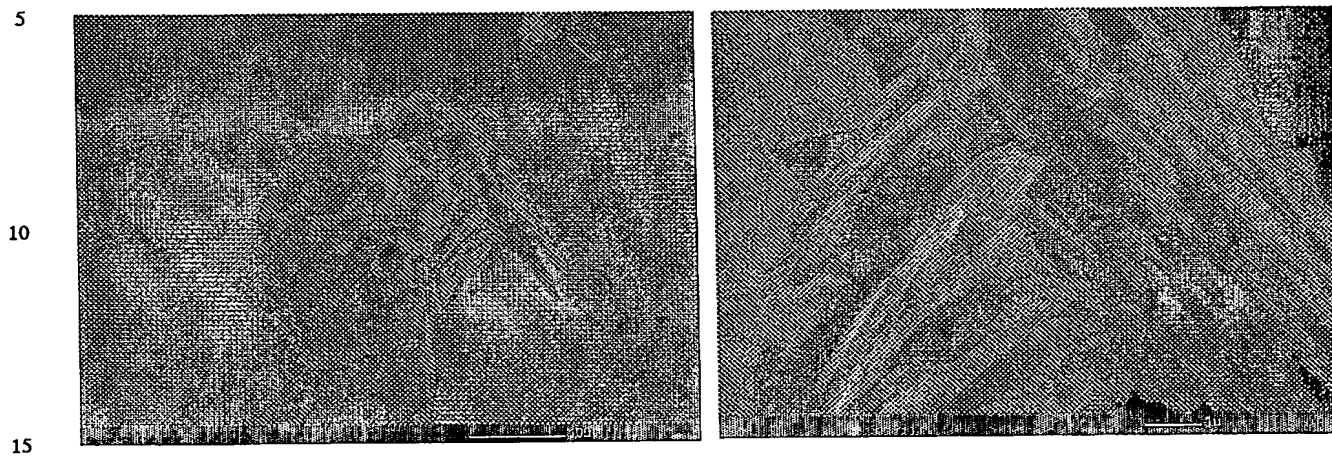


4 (c) 4 (d)

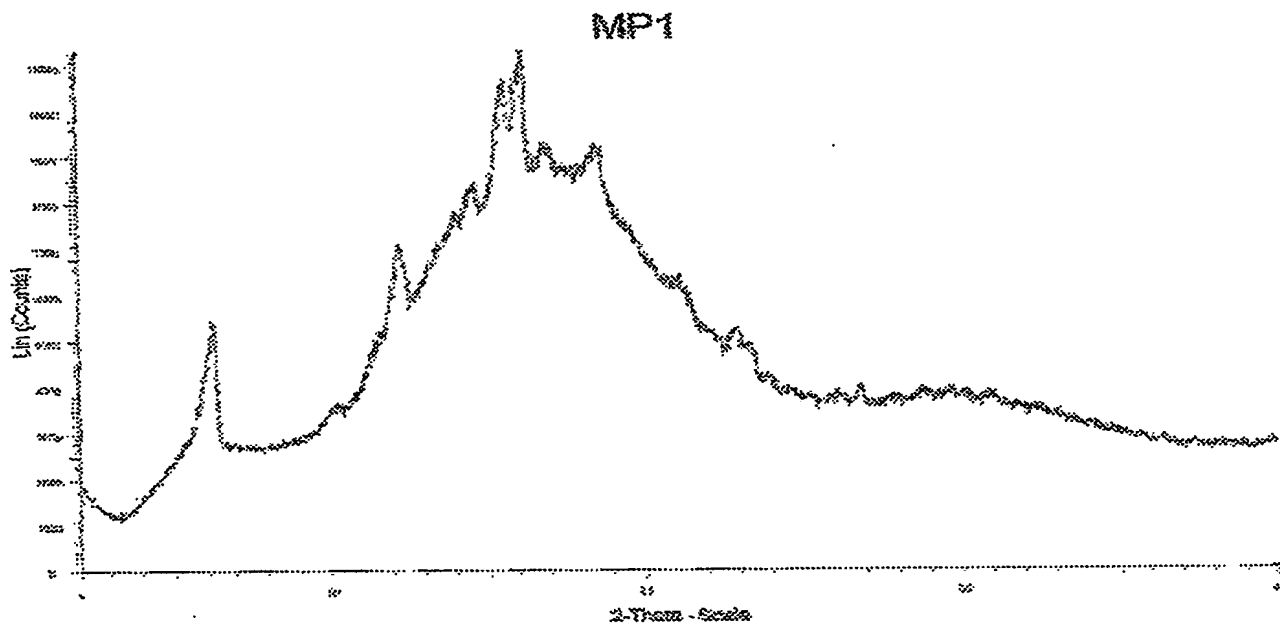
**Figure 4: SEM pictures of budesonide precipitated without sonication (a) at 25 °C, (b) at 15 °C, (c) 10 °C, (d) 5 °C.**



**Figure 5: diameters of budesonide particle fully precipitated against temperature, without sonication.**



**Figure 6: SEM pictures of budesonide fully precipitated without sonication at 15 °C.**



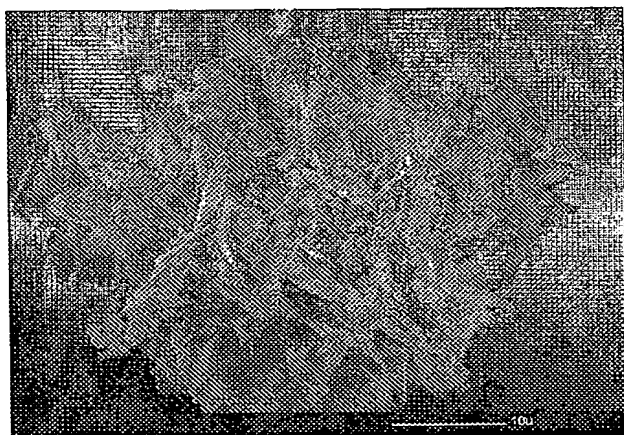
**Figure 7: XRPD of budesonide fully precipitated at 15°C without sonication.**

5

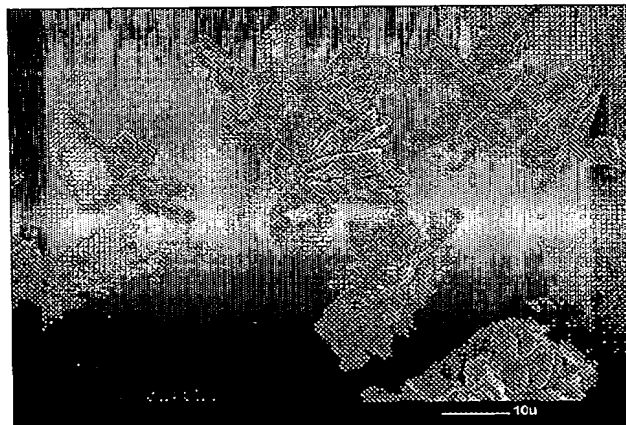
15

25

30

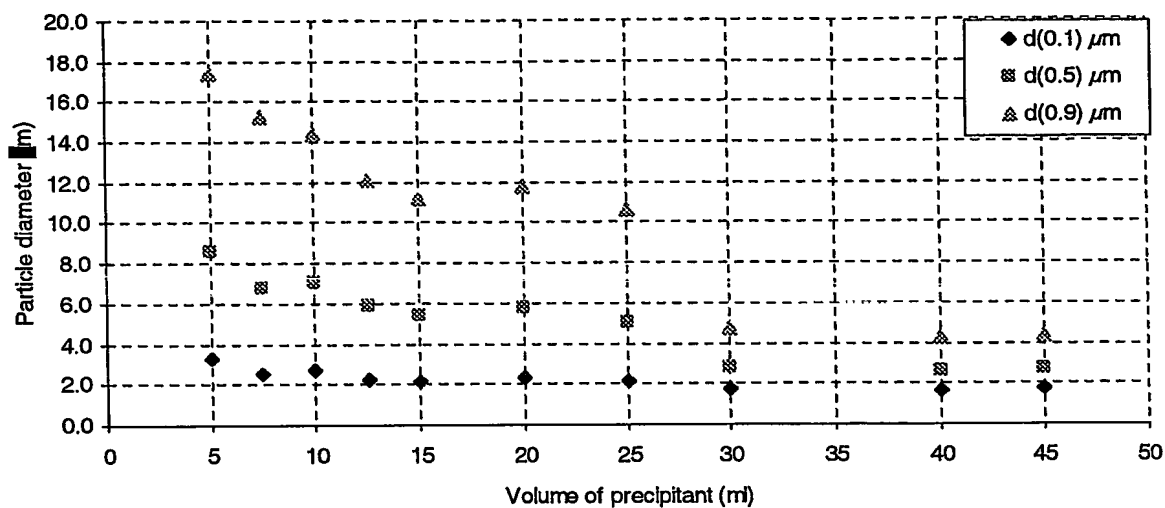


**8(a)**



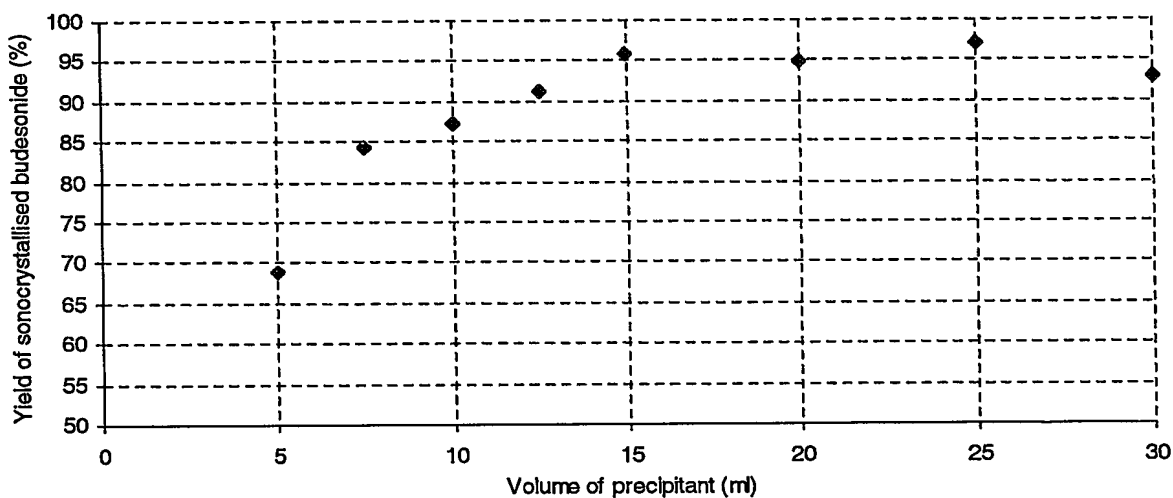
**8(b)**

**Figure 8: formoterol particles precipitated without sonication at 10 °C.**



**Figure 9: sonocrystallised budesonide particle diameters against volume of precipitant, at 15 °C.**

5



**Figure 10: yield of budesonide sonocrystallised against volume of precipitant, at 15 °C..**

10

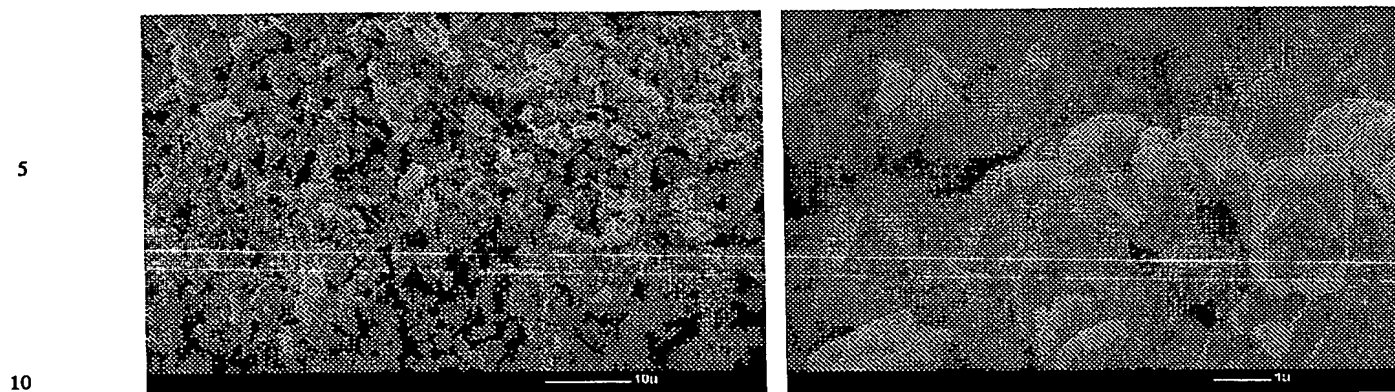


Figure 11: budesonide fully precipitated using 40 ml of water with sonication, at 15 °C.

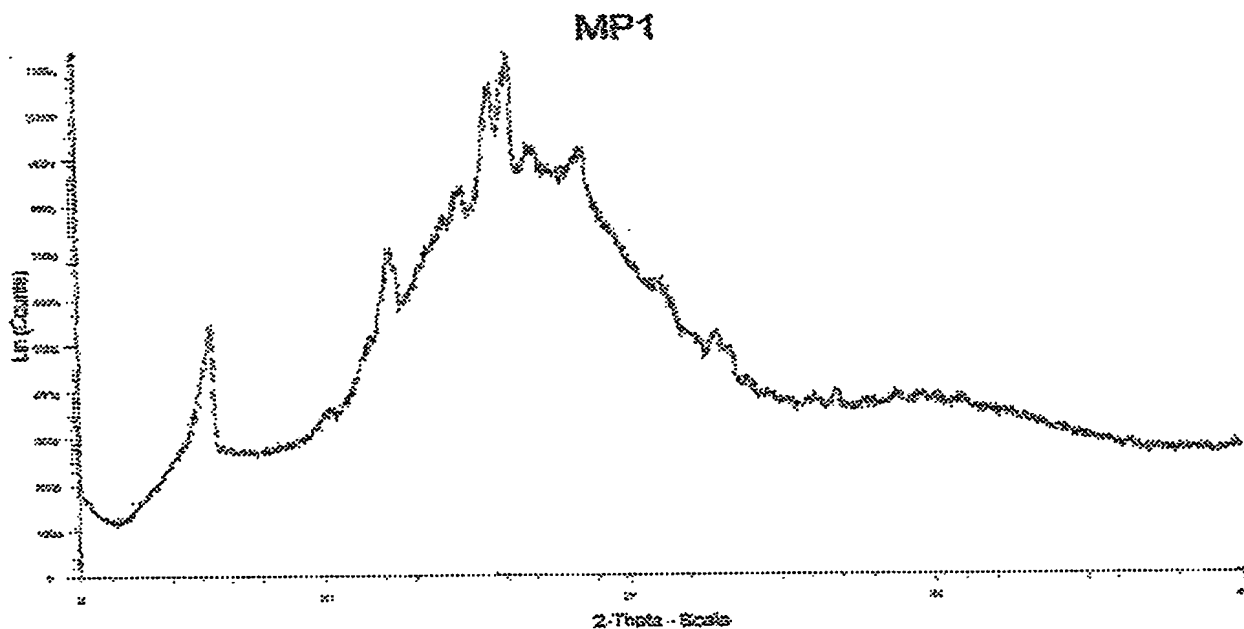


Figure 12: XRPD of fully precipitated budesonide using water with sonication, at 15 °C.

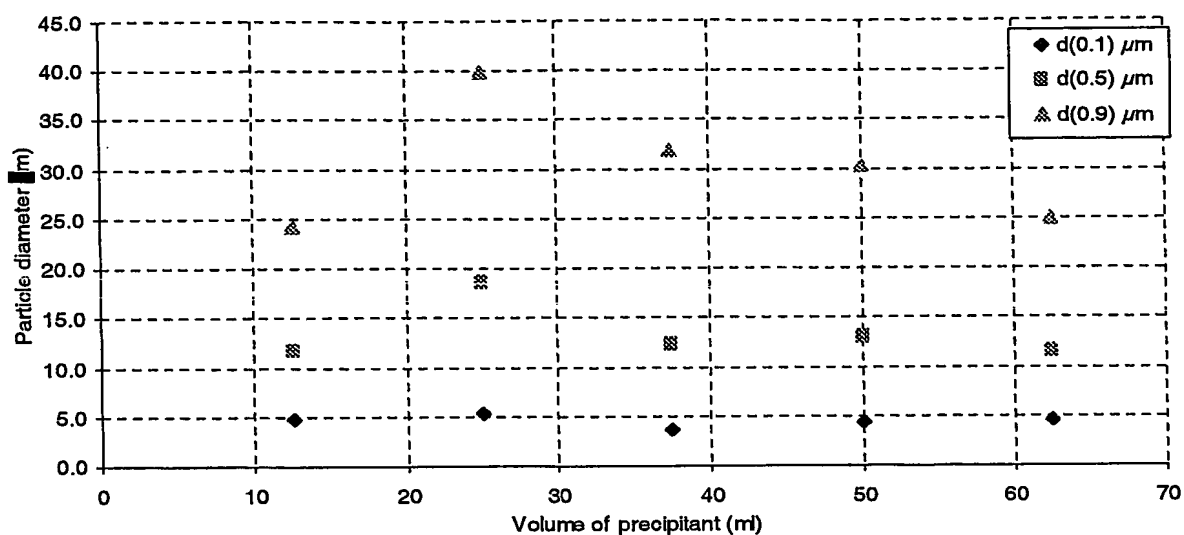


Figure 13: sonocrystallised formoterol particle diameters against the volume of precipitant (acetonitrile) at 15 °C.

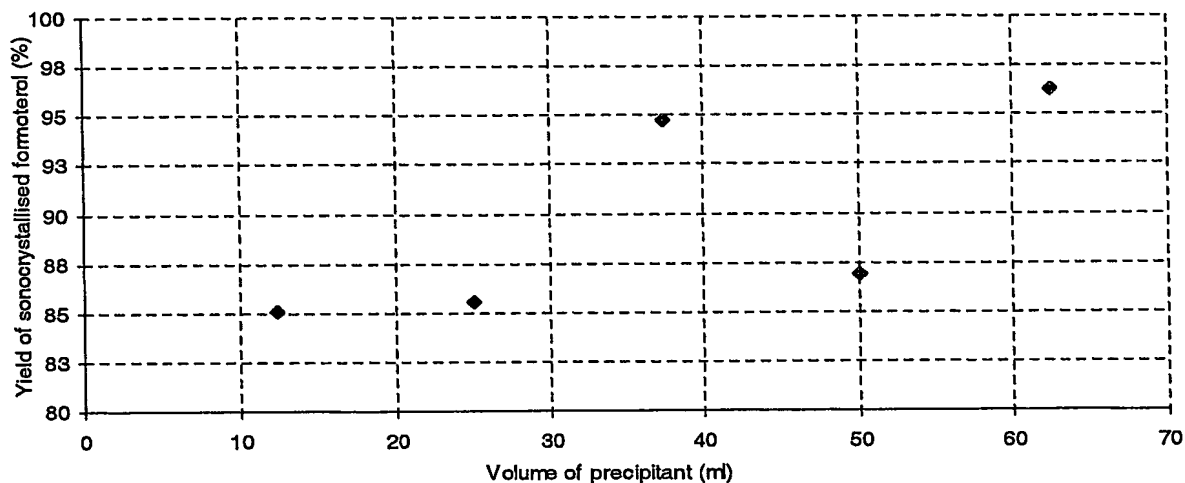


Figure 14: yield of formoterol sonocrystallised against volume of precipitant, at 15 °C.



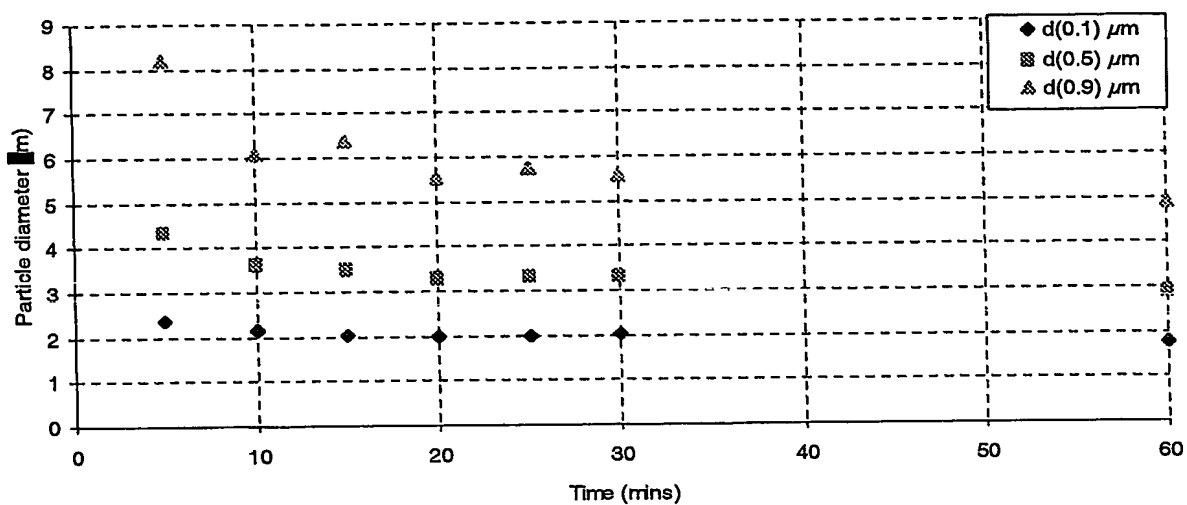


Figure 15: influence of precipitation time on sonocrystallised budesonide particle diameters.

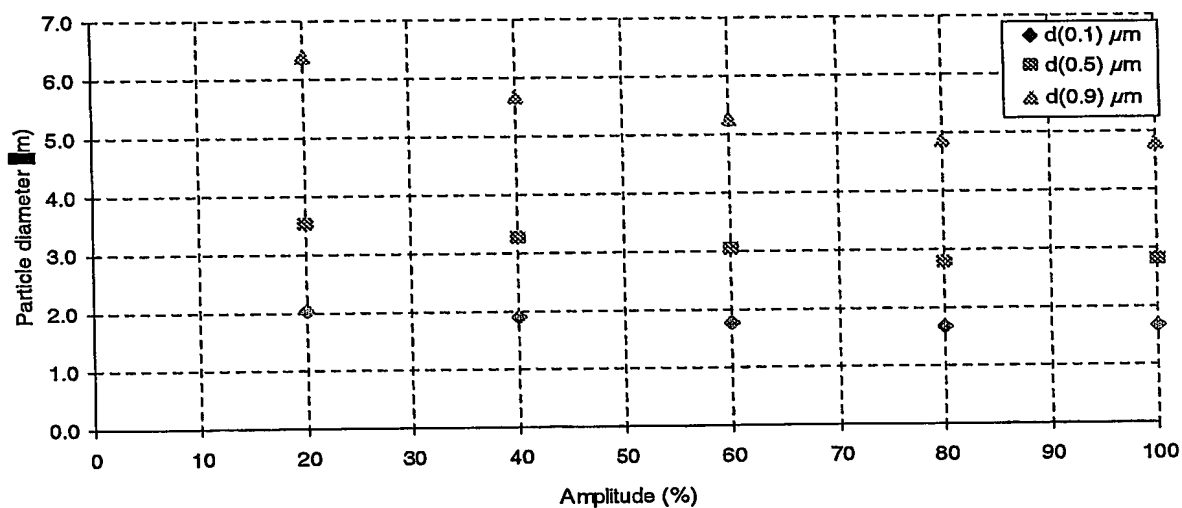
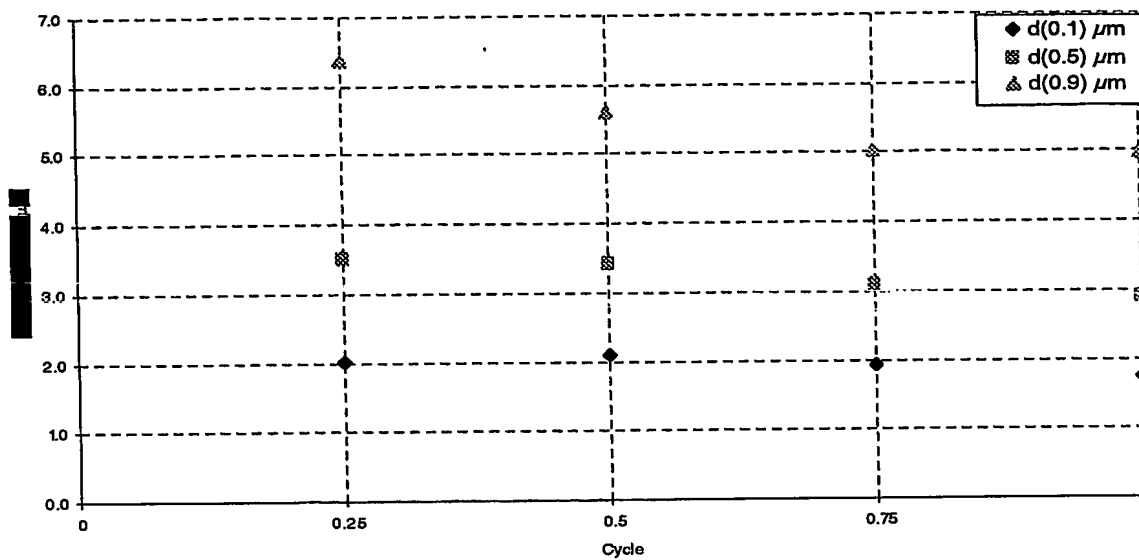
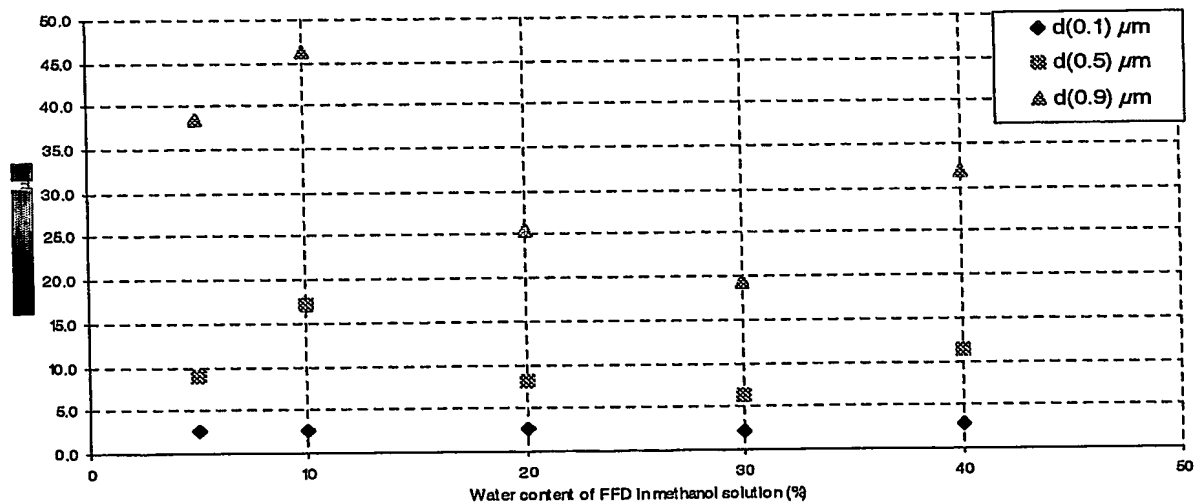


Figure 16: diameter of sonocrystallised budesonide particle against the amplitude of ultrasonic energy.



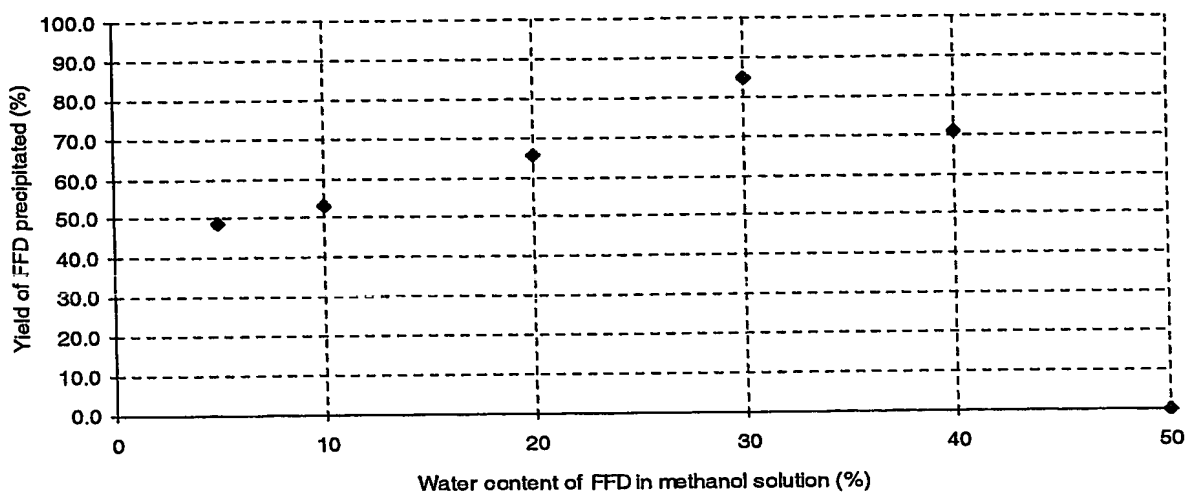
**Figure 17: diameters of sonocrystallised budesonide particle against the cycle of ultrasonic energy at 20 % (42  $\mu\text{m}$ ) amplitude.**

5



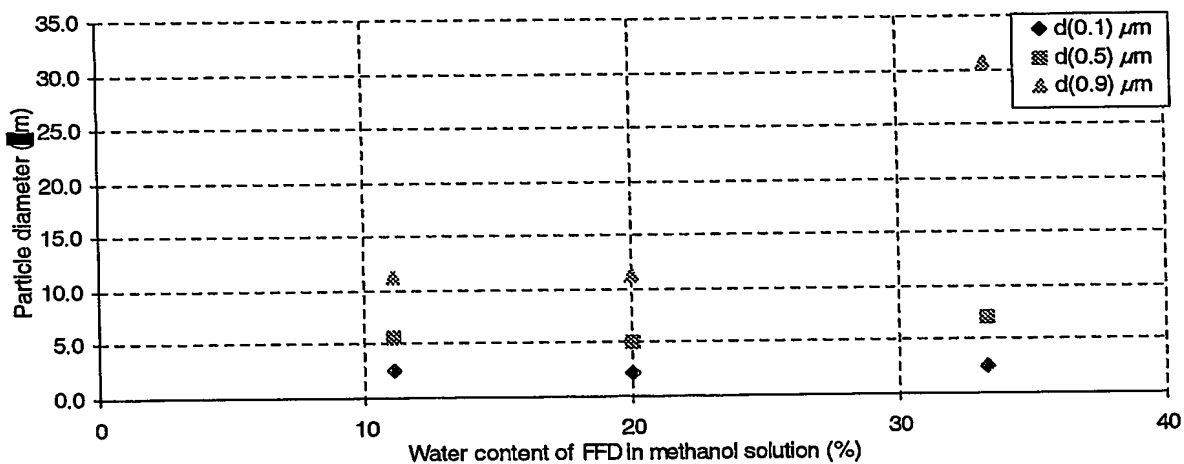
**Figure 18: influence of the addition of water on the diameter of sonocrystallised formoterol particles precipitated with diethyl ether.**

10



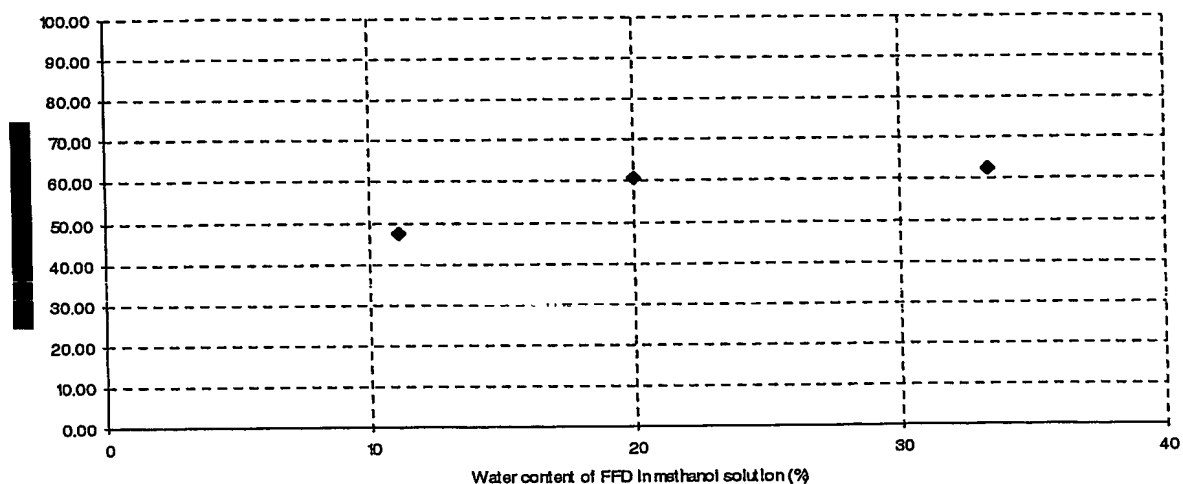
**Figure 19: influence of the addition of water on the yield of sonocrystallised formoterol particles precipitated with diethyl ether.**

5



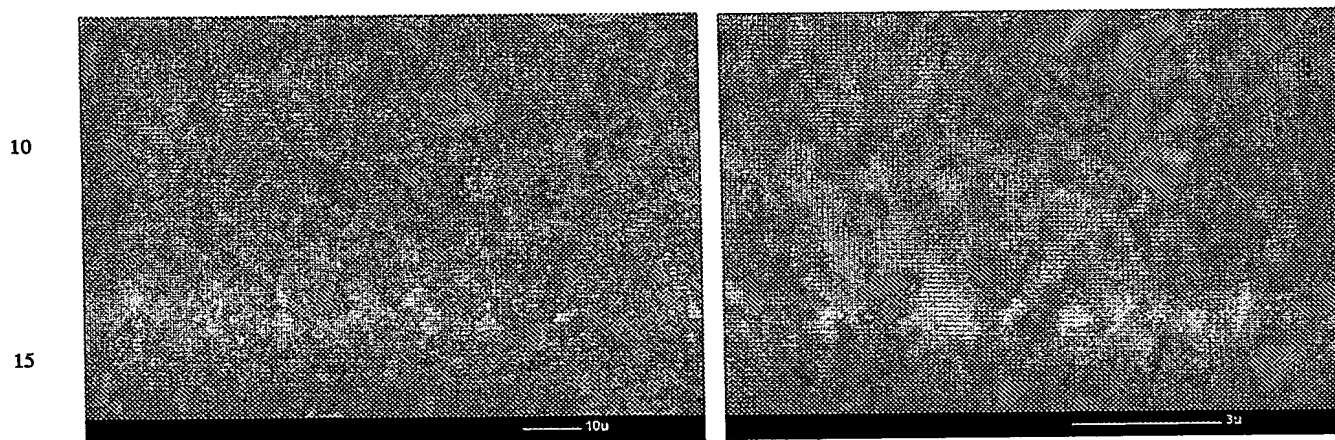
**Figure 20: sonocrystallised formoterol particle diameters precipitated with acetonitrile, against the water content of the drug solution**

10



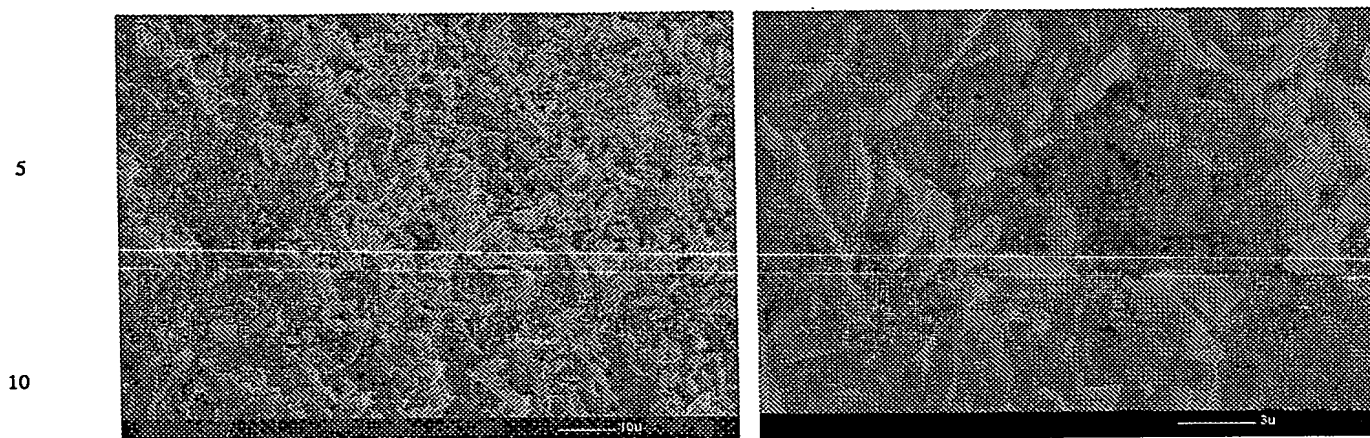
**Figure 21: yield of sonocrystallised formoterol particle diameters precipitated using acetonitrile, against the water content of the drug solution.**

5

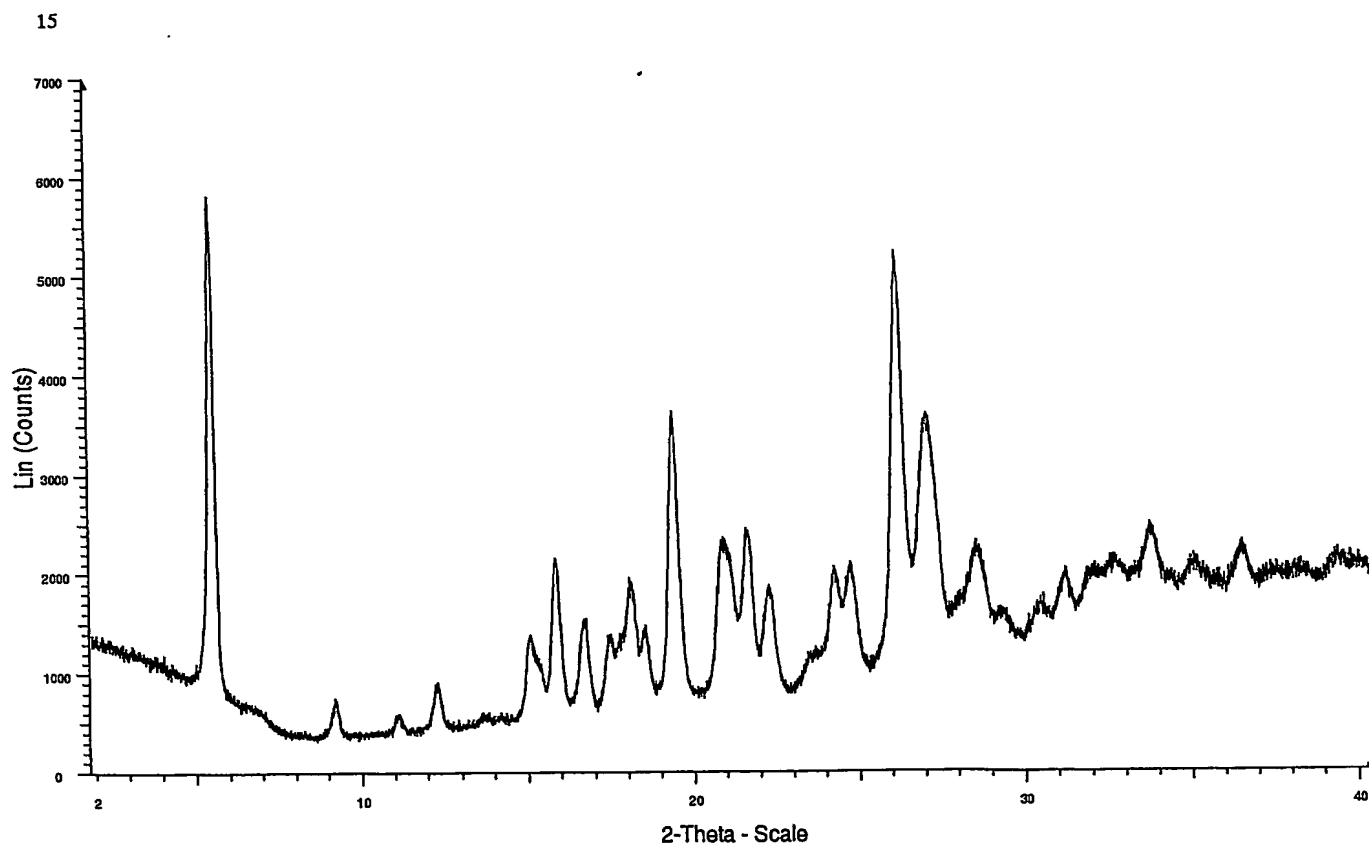


**Figure 22: SEM of formoterol particles precipitated with acetonitrile and sonication, with 20 %w/w water at 5 °C.**

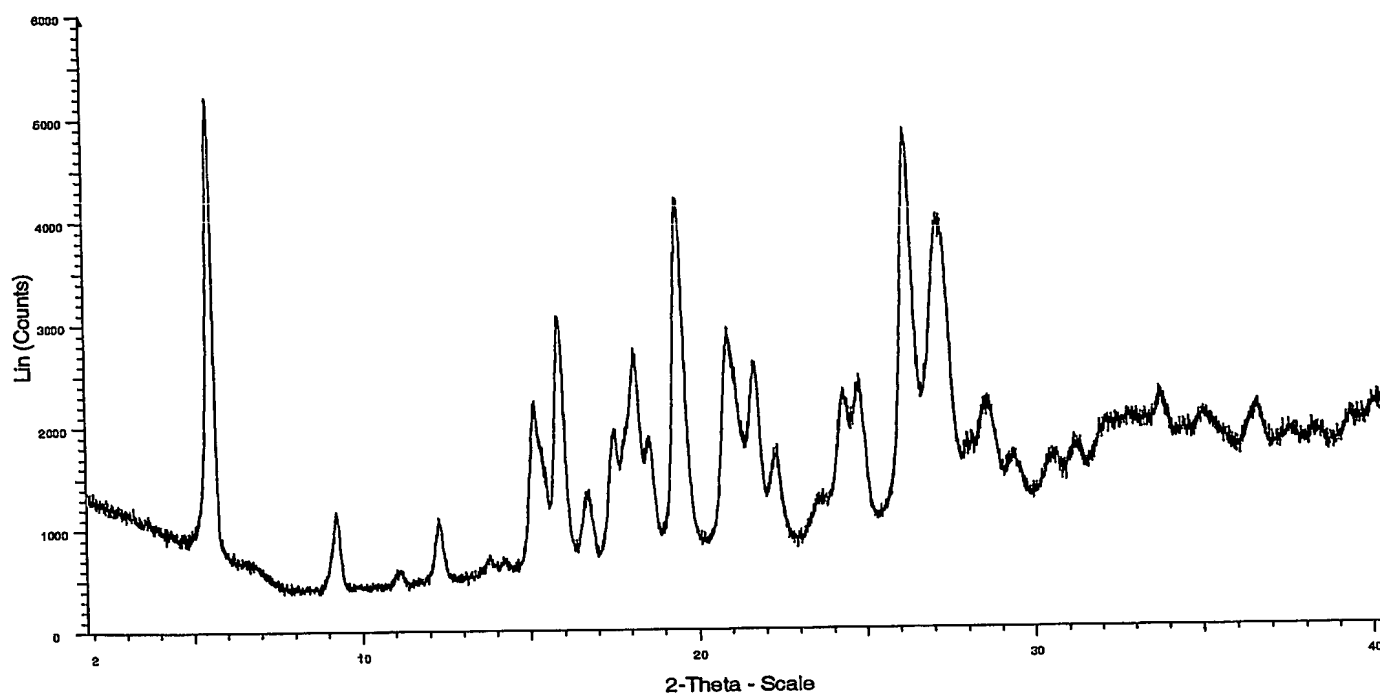
20



**Figure 23: SEM of formoterol particles precipitated with diethyl ether and sonication with 30%w/w water at 15°C.**



**Figure 24: XRPD of sonocrystallised formoterol particles precipitated with diethyl ether from a 30 %w/w water drug solution at 15 °C.**



**Figure 25: XRPD of sonocrystallised formoterol particles precipitated with acetonitrile  
from a 20 %w/w water drug solution at 15 °C.**

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